

The following tables contain lists of existing codes sections approaching their nonretroactive enforcement dates or recently adopted codes that are enforceable as of January 1, 2006. These NIST Handbook 44, “Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices,” code requirements may require action by device manufacturers, owners/operators, or regulatory officials. This information is provided to alert interested parties on upcoming Handbook 44 requirements. Requirements in the tables are paraphrased; therefore, it is recommended that the latest edition of Handbook 44 be consulted for the complete text. Codes that were amended to provide greater clarity or make other editorial changes are not included in this information. A complete report of changes to the handbook is published annually in the Report of the National Conference on Weights and Measures. Changes to requirements are also referenced in the amendments table in each edition of Handbook 44. It is recommended that you contact the statutory authority in your weights and measures jurisdiction for specific details on the enforcement of these code requirements.

Retroactive requirements apply to *all* equipment in commercial service prior to, and in use at any time on or after, the enforcement date. Nonretroactive requirements are enforceable for equipment: (1) manufactured, (2) new and used brought into a jurisdiction, and (3) previously in noncommercial use, then placed into commercial use *after* the effective date. Note: Paragraphs designated with a bracketed superscript number one [<sup>1</sup>] include multiple requirements with various enforcement dates.

<b>NIST Handbook 44 Codes</b> <b>(With a Nonretroactive Enforcement Date On or After January 1, 2006)</b>			
<b>Code Section</b>	<b>Paragraph</b>	<b>Requirement</b>	<b>Effective Date</b>
2.20. Scales	S.1.8.4. Recorded Representations, Point-of-Sale Systems	Effective January 1, 2006, the “#”symbol is no longer acceptable to identify the unit of measurement for weight values when sales information is recorded by cash registers interfaced with a weighing element in a point-of-sale system.	Nonretroactive as of January 1, 2006
2.20.	S.2.1.3.1. Zero-Tracking for Scales manufactured Between January 1, 1981 and January 1, 2007	<p>The maximum load that can be “rezeroed,” when either placed on or removed from the platform all at once under normal operating conditions, shall be:</p> <p>(a) for bench, counter, and livestock scales: 0.6 scale division;</p> <p>(b) for vehicle, axle-load, and railway track scales: 3.0 scale divisions; and</p> <p>(c) for all other scales: 1.0 scale division.</p>	Nonretroactive as of January 1, 1981 and Enforceable through January 1, 2007
2.20.	S.2.1.3.2. Zero-Tracking for Scales manufactured On or After January 1, 2007	<p>The maximum load that can be “rezeroed,” when either placed on or removed from the platform all at once under normal operating conditions, shall be:</p> <p>(a) for vehicle, axle-load, and railway track scales: 3.0 scale divisions; and</p> <p>(b) for all other scales: 0.5 scale division.</p>	Nonretroactive as of January 1, 2007

**NIST Handbook 44 Codes**  
**(With a Nonretroactive Enforcement Date On or After January 1, 2006)**

Code Section	Paragraph	Requirement	Effective Date
<b>3.30. Liquid-Measuring Devices</b>	<b>S.1.6.1. Indication of Delivery [<sup>1</sup>]</b>	<p>The device shall automatically show on its face the initial zero condition and the quantity delivered (up to the nominal capacity).</p> <p>The first 0.03 L (or 0.009 gal) of a delivery and its associated total sales price need not be indicated on electronic devices manufactured prior to January 1, 2006.</p> <p>For electronic devices manufactured on or after January 1, 2006, the measurement, indication of delivered quantity, and the indication of total sales price shall be inhibited until the fueling position reaches conditions necessary to ensure that the delivery starts at zero.</p>	<b>Nonretroactive for devices manufactured on or after of January 1, 2006</b>
<b>3.31. Vehicle-Tank Meters</b>	<b>S.2.4. Zero-Set-Back Interlock, Vehicle-Tank Meters, Electronic</b>	<p>Except for vehicle-mounted metering systems used solely for the delivery of aviation fuel, a device shall be so constructed that after an individual or multiple deliveries at one location have been completed, an automatic interlock system shall engage to prevent a subsequent delivery until the indicating and, if equipped, recording elements have been returned to their zero position. For individual deliveries, if there is no product flow for 3 minutes the transaction must be completed before additional product flow is allowed. The 3-minute timeout shall be a sealable feature on an indicator.</p>	<b>Nonretroactive as of January 1, 2006</b>

**NIST Handbook 44 Codes Newly Adopted or Recently Modified  
(With an Enforcement Date of January 1, 2006)**

<b>Code Section</b>	<b>Paragraph</b>	<b>Requirement</b>	<b>New or Modified</b>	<b>Effective Date</b>
<b>2.20. Scales</b>	<b>T.N.4.5. Time Dependence</b>	<b>A time dependence test shall be conducted during type evaluation and may be conducted during field verification provided test conditions remain constant.</b>	<b>Paragraph Modified</b>	<b>Applies to all equipment on January 1, 2006</b>

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Code Section	Paragraph	Requirement	New or Modified	Effective Date
2.20.	T.N.4.5.1. Time Dependence; Class II, III, and IIII Non-automatic Weighing Instruments	<p>A non-automatic weighing instrument of Class II, III, and IIII shall meet the following requirements at constant test conditions:</p> <ul style="list-style-type: none"> <li>(a) When any load is kept on an instrument, the difference between the indication obtained immediately after placing a load and the indication observed during the following 30 minutes shall not exceed 0.5 e.</li> <li>(b) However, the difference between the indication obtained at 15 minutes and that at 30 minutes shall not exceed 0.2 e. If these conditions are not met, the difference between the indication obtained immediately after placing a load on the instrument and the indication observed during the following 4 hours shall not exceed the absolute value of the maximum permissible error at the load applied.</li> <li>(c) The deviation on returning to zero as soon as the indication has stabilized, after the removal of any load which has remained on the instrument for 30 minutes, shall not exceed 0.5 e.</li> </ul> <p>For a multi-interval instrument, the deviation shall not exceed 0.5 e<sub>1</sub> (first weighing segment).</p> <p>On a multiple range instrument, the deviation on returning to zero from Max<sub>i</sub> (load in the applicable weighing range) shall not exceed 0.5 e<sub>i</sub> (interval of the weighing segment). Furthermore, after returning to zero from any load greater than Max<sub>1</sub> (capacity of the first weighing range) and immediately after switching to the lowest weighing range, the indication near zero shall not vary by more than e<sub>1</sub> (interval of the first weighing range) during the following 5 minutes.</p>	New Paragraph	Applies to all equipment on January 1, 2006

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<b>Code Section</b>	<b>Paragraph</b>	<b>Requirement</b>	<b>New or Modified</b>	<b>Effective Date</b>
<b>2.20.</b>	<b>T.N.4.5.2. Time Dependence; Class III L Non-automatic Weighing Instruments</b>	<p><b>A non-automatic weighing instrument of Class III L shall meet the following requirements:</b></p> <p>(a) When any load is kept on an instrument, the difference between the indication obtained immediately after placing a load and the indication observed during the following 30 minutes shall not exceed 1.5 e.</p> <p>(b) However, the difference between the indication obtained at 15 minutes and that at 30 minutes shall not exceed 0.6 e. If these conditions are not met, the difference between the indication obtained immediately after placing a load on the instrument and the indication observed during the following 4 hours shall not exceed the absolute value of the maximum permissible error at the load applied.</p> <p>(c) The deviation on returning to zero as soon as the indication has stabilized, after the removal of any load which has remained on the instrument for 30 minutes, shall not exceed one-half of the absolute value of the applicable tolerance for the applied load for Class III L devices.</p>	<b>New Paragraph</b>	<b>Applies to all equipment on January 1, 2006</b>

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<b>Code Section</b>	<b>Paragraph</b>	<b>Requirement</b>	<b>New or Modified</b>	<b>Effective Date</b>
<b>2.20.</b>	<b>T.N.4.6. Time Dependence (Creep) for Load Cells During Type Evaluation</b>	<p>A load cell (force transducer) marked with an Accuracy Class shall meet the following requirements at constant test conditions:</p> <p>(a) <b>Permissible Variations of Readings.</b> - With a constant maximum load for the measuring range (<math>D_{max}</math>) between 90 % and 100 % of maximum capacity (<math>E_{max}</math>), applied to the load cell, the difference between the initial reading and any reading obtained during the next 30 minutes shall not exceed the absolute value of the maximum permissible error (mpe) for the applied load (see Table T.N.4.6.). The difference between the reading obtained at 20 minutes and the reading obtained at 30 minutes shall not exceed 0.15 times the absolute value of the mpe (see Table T.N.4.6.).</p> <p>(b) <b>Apportionment Factors.</b> - The mpe for creep shall be determined from Table T.N.4.6. <b>Maximum Permissible Error (mpe) for Load Cells using the following apportionment factors (<math>p_{LC}</math>):</b></p> <p><math>p_{LC} = 0.7</math> for load cells marked with S (single load cell applications), and  <math>p_{LC} = 1.0</math> for load cells marked with M (multiple load cell applications)</p> <p><b>Table T.N.4.6. Maximum Permissible Error (mpe) for Load Cells During Type Evaluation (see Handbook 44)</b></p>	<b>New Paragraph</b>	<b>Applies to all equipment on January 1, 2006</b>
<b>2.21. Belt-Conveyor Scale Systems</b>	<b>UR.3.4. Diversion or Loss of Measured Product</b>	<b>There shall be no operation(s) or condition(s) of use that result in loss or diversion that adversely affects the quantity of measured product.</b>	<b>New Paragraph</b>	<b>Applies to all equipment on January 1, 2006</b>

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<b>Code Section</b>	<b>Paragraph</b>	<b>Requirement</b>	<b>New or Modified</b>	<b>Effective Date</b>
<b>3.30. Liquid-Measuring Devices</b>	<b>N.4.2.2. Retail Motor-Fuel Devices</b>	<p>(a) Devices without a marked minimum flow-rate shall have a "special" test performed at the slower of the following rates:</p> <p>(1) 19 L (5 gal) per minute, or</p> <p>(2) the minimum discharge rate at which the device will deliver when equipped with an automatic discharge nozzle set at its slowest setting.</p> <p>(b) Devices with a marked minimum flow-rate shall have a "special" test performed at or near the marked minimum flow rate.</p>	<b>Modified Paragraph</b>	<b>Applies to all equipment on January 1, 2006</b>
<b>3.31. Vehicle-Tank Meters</b>	<b>N.4.2. Special Tests (Except Milk-Measuring Systems)</b>	<p>Special tests shall be made to develop the operating characteristics of a measuring system and any special elements and accessories attached to or associated with the device. Special test of measuring system shall be made at a minimum discharge of rate of 20 % of the marked maximum discharge rate or at the minimum discharge rate marked on the device, whichever is less. Any tests except the Normal Test and the newly established conditions for the Product Depletion Test set forth in new paragraph N.4.5. are not considered a special test.</p>	<b>Modified Paragraph</b>	<b>Applies to all equipment on January 1, 2006</b>

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<b>Code Section</b>	<b>Paragraph</b>	<b>Requirement</b>	<b>New or Modified</b>	<b>Effective Date</b>
3.31.	N.4.5. Product Depletion Test	Except for vehicle-mounted metering systems used solely for the delivery of aviation fuel, the effectiveness of the vapor eliminator or vapor elimination means shall be tested by dispensing product at the normal flow rate until the product supply is depleted and continuing until the lack of fluid causes the meter indication to stop completely for at least 10 seconds. If the meter indication fails to stop completely for at least 10 seconds, continue to operate the system for 3 minutes. Finish the test by switching to another compartment with sufficient product to complete the test on a multi-compartment vehicle or by adding sufficient product to complete the test to a single compartment vehicle. When adding product to a single compartment vehicle, allow appropriate time for any entrapped vapor to disperse before continuing the test. Test drafts shall be of the same size and run at approximately the same flow rate.	New Paragraph	Applies to all equipment on January 1, 2006
3.31.	T.4. Product Depletion Test	<p>The range of the test results for the normal test and the product depletion test shall not exceed the tolerance shown in Table T.4. Test drafts shall be of the same size and run at approximately the same flow rate.</p> <p>[Note: The result of the product depletion test may fall outside of the applicable test tolerance as specified in Table T.2.]</p> <p>Table T.4. Tolerances for Vehicle-Tank Meters on Product Depletion Tests, Except Milk Meters (see Handbook 44)</p>	New Paragraph and Table	Applies to all equipment on January 1, 2006



**NIST Handbook 44 Codes Newly Adopted or Recently Modified  
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Code Section	Paragraph	Requirement	New or Modified	Effective Date
5.59.	Electronic Livestock, Meat, and Poultry Evaluation Systems and/or Devices – Tentative Code	This is a tentative code intended for trial or experimental use until further study demonstrates the design, performance, installation, use, and test procedures are ready for adoption. The code applies to electronic devices or systems for measuring the composition or quality constituents of live animals, livestock and poultry carcasses, and individual cuts of meat or any combination of these parts.	Tentative New Code	Tentative Code applicable to all equipment January 1, 2006
Fundamental Considerations- Appendix A	3.1. Adequacy <sup>2</sup>	The new footnote recognizes a field standard as suitable when it meets the specifications and tolerances in the appropriate NIST Handbook 105 Series or other suitable and designated standards. This guideline does not preclude any standard in use that was approved by a State Director.	Modified Guideline and Added a Corresponding Footnote	Applies to all equipment on January 1, 2006
Fundamental Considerations- Appendix A	3.2. Tolerances for Standards	Except for work of relatively high precision, it is recommended that the accuracy of standards used in testing commercial weighing and measuring equipment be established and maintained so that the use of corrections is not necessary. When the standard is used without correction, its combined error and uncertainty must be less than one-third of the applicable tolerance of the device under test.	Modified Guideline	Applies to all equipment on January 1, 2006
Fundamental Considerations- Appendix A	3.3. Accuracy	Prior to initial use, the accuracy of a field standard should be verified. Field standards should be calibrated as often as circumstances require, whenever damage is known or suspected, particularly volumetric field standards to affirm their continued accuracy. Secondary field standards should be verified much more frequently than basic standards.	Modified Guideline	Applies to all equipment on January 1, 2006
Definitions- Appendix D	D <sub>max</sub> (maximum load of the measuring range)	D <sub>max</sub> is the largest value of a quantity (mass) which is applied to a load cell during test or use. This value shall not be greater than E <sub>max</sub> .[2.20]	New Definition	Applies to all equipment on January 1, 2006

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<b>Definitions- Appendix D</b>	<b>E<sub>max</sub> (maximum capacity)</b>	<b>E<sub>max</sub> is the largest value of a quantity (mass) which may be applied to a load cell without exceeding the mpe.[2.20]</b>	<b>New Definition</b>	<b>Applies to all equipment on January 1, 2006</b>